IN THE CLAIMS

Please cancel claims 2, 18, 20, and 31-35. Please amend claims 1, 21, and 26. Please enter new claims 36-42.

1. (Currently Amended) A method for the targeted application of at least one reagent onto immobilized biological material comprising the steps of:

(a) localizing immobilized biological material selected from the group consisting of cells, cell parts, and chromosomes onto a support slide;

(b) placing the support slide having the immobilized biological material onto an optical scanning device comprising an automated microscope having a camera combined with a digital image analyzer;

(c) analyzing electronically images captured by the camera and identifying the objects of interest;

([c] d) recording electronically the position of an object of interest of the immobilized biological material with respect to the automated optical scanning device;

([d] e) automatically positioning a micropipette over the position of the object of interest recorded in step ([c] d); and,

([e] f) applying ~~the~~ a reagent onto the object of interest[.] ;

wherein steps (c) to (f) are automated without manual manipulation by man.

2. (Canceled)

3. (Previously Amended) The method according to claim 2 wherein a lens position on a turret of the microscope is occupied with a micropipette.

4. (Previously Amended) The method according to claim 1 wherein the applying step further comprises applying the reagent in a localized area substantially limited to the position of the object of interest.

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5. (Original) The method according to claim 1 wherein the step of applying the reagent further includes the use of an automated pipette for dispensing a pre-selected volume of the reagent.

6. (Original) The method according to claim 4 wherein the step of applying the reagent onto a localized area further includes placing a cover slip over the immobilized biological material following the step of applying a reagent.

7. (Original) The method according to claim 1 further comprising the additional step of photographing the immobilized biological material.

8. (Previously Amended) The method according to claim 7 wherein the photographs are displayed, thereby providing an additional selection step for selecting only positions corresponding to a selected displayed photograph for the applying step.

9. (Original) The method according to claim 1 comprising the additional step of washing the immobilized biological material following an incubation interval.

10. (Previously Amended) The method according to claim 1 comprising the additional step of washing the reagent applied to the object of interest following application of the reagent.

11. (Previously Amended) The method according to claim 10 comprising the additional step of positioning an analyzing device over the recorded position of the object of interest.

12. (Previously Amended) The method according to claim 1 wherein the object of interest is labeled with a specific marker.

13. (Original) The method according to claim 1 wherein the immobilized biological material further comprises metaphase chromosomes.

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14. (Original) The method according to claim 11 wherein the reagent is selected from a group consisting of a DNA, an RNA, and a polypeptide.

15. (Original) The method according to claim 1 wherein the reagent further comprises a plurality of different labelings.

16. (Previously Amended) The method according to claim 15 wherein at least one of said plurality of reagents further comprises a fluorescent dye.

17. (Previously Amended) The method according to claim 14 wherein the reagent specifically binds to the object of interest.

18. (Canceled)

19. (Previously Amended) The method according to claim 17 wherein the specific binding of the reagent to the object of interest is a hybridization reaction.

20. (Canceled)

21. (Currently Amended) A method for the targeted application of at least one reagent onto one or several small regions of interest containing biological objects of interest within a larger region of immobilized biological material comprising the steps of:

(a) providing biological material selected from the group consisting of tissue, cells, cell parts, and chromosomes, said biological material immobilized onto a support slide;

(b) placing the support slide having the immobilized biological material onto an automated optical scanning device <u>comprising an automated microscrope having a camera combined with a digital image analyzer</u>;

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(c) automatically detecting at least one biological object of interest ~~and recording the position of the at least one biological object of interest with respect to the slide~~ by analyzing electronically images captured by the camera and identifying the objects of interest;

(d) recording electronically the position of the at least one biological object of interest of the immobilized biological material with respect to the slide;

([d] e) automatically positioning a micropipette over the position of said at least one biological object of interest recorded during step (c); ~~and,~~

([e] f) applying a reagent onto the at least one biological object of interest[.];

wherein steps (c) to (f) are automated without manual manipulation by man.

22. (Original) The method according to claim 21 wherein the optical scanning device is a microscope comprising a motorized x-y stage and motorized focus control which is connected to a digital image analysis system.

23 (Original) The method according to claim 22 wherein a micropipette device is attached to an empty objective position of the objective turret of the microscope and wherein the micropipette is brought into the optical axis of the microscope by switching the objective turret between the observation position and the pipette position.

24. (Original) The method according to claim 23 wherein the step of applying the reagent further includes the use of an automated pipette for dispensing a pre-selected volume of the reagent.

25. (Previously Amended) The method according to claim 21 wherein the step of applying the reagent onto said at least one biological object of interest further includes placing a cover slip over the region of interest following the step of applying the reagent.

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26. (Currently Amended) The method according to claim 21 further comprising the additional step of automatically relocating the said at least one biological object of interest to the position recorded in step (c) following said step (e).

27. (Previously Amended) The method according to claim 21 further comprising the additional step of automatically recording an image of the at least one biological object of interest.

28. (Previously Amended) The method according to claim 27 further comprising the additional step of reviewing a gallery of recorded images on a display device for selecting from a plurality of biological objects of interest suited for applying the reagent.

29. (Previously Amended) The method according to claim 21 wherein the at least one biological material of interest is labeled with a specific marker.

30. (Original) The claim according to claim 29 wherein the specific marker is detected by means of a chromogenic or fluorescent dye.

31. (Canceled)

32. (Canceled)

33. (Canceled)

34. (Canceled)

35. (Canceled)

36. (New) A method for the targeted application of at least one reagent onto immobilized biological material comprising the steps of:

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(a) localizing immobilized biological material selected from the group consisting of cells, cell parts, and chromosomes onto a support slide;

(b) placing the support slide having the immobilized biological material onto an optical scanning device comprising a microscope having a camera combined with a digital image analyzer;

(c) recording electronically the position of an object of interest of the immobilized biological material with respect to the optical scanning device;

(d) automatically positioning a micropipette over the position of the object of interest recorded in step (c), the micropipette contained within a turret of said microscope; and,

(e) applying the reagent onto the object of interest.

37. (New) The method according to claim 36 wherein the microscope is an automated microscope.

38. (New) The method according to claim 37 comprising the additional step of analyzing electronically images captured by the camera and identifying the objects of interest.

39. (New) The method according to claim 37 comprising the additional step of positioning an analyzing device over the recorded position of the object of interest.

40. (New) The method according to claim 36 wherein said step (d) further comprises placing a micropipette into the optical axis of the microscope by switching the objective turret between an observation position and a pipette position, the pipette being positioned within an empty objective position of the turret of the microscope.

41. (New) The method according to claim 1 wherein said step of (d) recording electronically the position of an object of interest further includes recording a plurality of objects of interest positioned on a single support slide and thereafter sequentially

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automatically positioning a micropipette and applying a reagent corresponding to the recorded position of each of said plurality of objects of interest.

42. (New) The method according to claim 21 wherein said step of (d) recording electronically the position of an object of interest further includes recording a plurality of objects of interest positioned on a single support slide and thereafter sequentially automatically positioning a micropipette and applying a reagent corresponding to the recorded position of each of said plurality of objects of interest.

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